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Claims

[c1] 1. A method of making a single-feed, three-monopole, circularly polarized, helix antenna, comprising the steps of:

providing a first, a second and a third monopole element, each of said monopole elements having a first and a second end portion;

physically positioning said first, second and third monopole elements at about 0-degrees, 120-degrees, and 240-degrees, respectively, around a central axis such that said first end portions of said first, second and third monopole elements are located physically adjacent to said central axis, and such that said first, second and third monopole elements are relatively strongly coupled;

connecting an antenna-feed to said first monopole element such that said first monopole element is a directly-fed monopole element, and such that said second and a third monopole elements are parasitically-fed from said first monopole element;

providing perturbation-means on at least one of said second and third monopole elements; and

controlling said perturbation-means on said at least one of said second and third monopoles in a manner to pro-

duce a plus 120 degree coupling of said second monopole element to said first monopole element, and in a manner to produce a minus 120 degree coupling of said third monopole element to said first monopole element.

[c2] 2. The antenna of claim 1 including the step of: controlling a geometric shape of said perturbation-means.

[c3] 3. The antenna of claim 1 including the step of: providing said first, second and third monopole elements as quarter wave monopole elements.

[c4] 4. The antenna of claim 1 including the step of: providing that said relatively strong coupling between said first, second and third monopole elements results in about one-half of feed-energy applied to said antenna feed being radiated from said first monopole element into space, as a remaining portion of said feed-energy is parasitically coupled to said second and third monopole elements.

[c5] 5. The method of claim 1 wherein said relatively strong coupling has a magnitude of about -6dB.

[c6] 6. The method of claim 1 including the step of: locating said perturbation-means on at least one of said

second and third monopole elements generally at said second end of said at least one of said second and third monopole elements.

[c7] 7. The method of claim 1 including the step of:
physically positioning said first, second and third monopole elements in a generally common plane.

[c8] 8. A method of making a circularly polarized antenna, comprising the steps of:
providing a first, a second and a third quarter-wave monopole element, each of said monopole elements having a first end portion and a second end portion;
physically positioning said first, second and third monopole elements at about 0-degrees, 120-degrees, and 240-degrees, respectively, in a common plane and around a central axis that extends generally perpendicular to said common plane such that said first end portions of said first, second and third monopole elements are located physically adjacent to each other and to said central axis, and such that said first, second and third monopole elements are relatively strongly coupled;
connecting an antenna-feed to said first monopole element such that said first monopole element is a directly-fed monopole element, and such that said second and a third monopole elements are parasitically-fed from said first monopole element;

providing a perturbation generally at said second end of at least one of said second and third monopole elements; and

controlling a geometric shape of said metal perturbation on said at least one of said second and third monopoles in a manner to produce a plus 120 degree parasitic coupling of said second monopole element to said first monopole element, and in a manner to produce a minus 120 degree parasitic coupling of said third monopole element to said first monopole element.

[c9] 9. The antenna of claim 8 including the step of:

providing that said relatively strong coupling between said first, second and third monopole elements results in about one-half of feed-energy applied to said antenna feed being radiated from said first monopole element, as a remaining portion of said feed-energy is parasitically coupled to said second and third monopole elements.

[c10] 10. The method of claim 9 wherein said relatively strong coupling has a magnitude of about -6dB.

[c11] 11. In a helical antenna having three monopole elements, a first of which is directly-fed, and a second and third of which are parasitically coupled to said directly fed monopole element, an improvement comprising:

means for shifting a resonant frequency of at lease one

of said second and third monopole elements in a manner such that one of said second and third monopole elements couples to said directly-fed monopole element at positive 120 degree and such that another of said second and third monopole elements couples to said directly-fed monopole element at negative 120 degrees.

[c12] 12. The improvement of claim 11 wherein said means for shifting a resonant frequency of at least one of said second and third monopole elements comprises:
a capacitive perturbation associated with said one of said second and third monopole elements and/or an inductive perturbation associated with said another of said second and third monopole elements.